

Application No.: 10/026,171  
 Response dated: May 30, 2006  
 Reply to Office Action of March 9, 2006

This listing and amendment of the claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for preparing a supported catalyst composition system comprising:
  - (a) first heating a composition comprising a metallocene catalyst compound and an activator to a temperature of from 75°C to 125°C, wherein said metallocene catalyst compound is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrenyl ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrozolyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium and or tin atom or a combination thereof, wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof; and

- (b) then combining the resulting composition of step (a) with a carrier, said carrier heated to 30-75°C.
2. Cancel
3. (Currently Amended) The method of claim 1 wherein in step (a) the composition is heated to a temperature in the range of from 75°C to 100°C, ~~and wherein said composition comprises said metallocene catalyst compound and an activator.~~

Application No.: 10/026,171  
 Response dated: May 30, 2006  
 Reply to Office Action of March 9, 2006

4. Cancel
5. (Previously Presented) The method of claim 3 wherein the metallocene catalyst compound has a solubility less than 20 weight percent of metallocene catalyst compound in toluene at 25°C.
6. (Currently Amended) A method for making a supported catalyst composition comprising:
  - (a) first forming a reaction product comprising a metallocene catalyst compound and an activator;
  - (b) second heating the reaction product to a temperature of from 60°C to 125°C;
  - (c) combining the resulting composition of steps (a) and (b) product with a carrier, wherein said metallocene catalyst compound is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrene ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrolyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium and/or tin atom or a combination thereof, and wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof, said carrier heated a temperature consisting essentially of 30-75°C.

Application No.: 10/026,171  
 Response dated: May 30, 2006  
 Reply to Office Action of March 9, 2006

7. (Original) The method of claim 6 wherein the reaction product is heated to a temperature in the range from 75°C to 100°C.
8. (Currently Amended) A method for making a supported catalyst composition comprising:
- (a) a first step consisting essentially of heating an activated metallocene catalyst product to a temperature of from 60°C to 125°C;
  - (b) a second step comprising combining a carrier with the activated metallocene catalyst product of step (a)

wherein said metallocene catalyst is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrenyl ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrozolyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium and or tin atom or a combination thereof, and said activated metallocene catalyst product further comprising an activator, wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof, said carrier heated to 30-75°C.

9. (Previously Presented) The method of claim 8 wherein the activated metallocene catalyst product is heated to a temperature of from 75°C to 100°C.

1999U024.D1.US.111.5.15.06.doc

- 4 of 16 -

Application No.: 10/026,171  
 Response dated: May 30, 2006  
 Reply to Office Action of March 9, 2006

10. (Currently Amended) A method for preparing a supported catalyst composition comprising:

- (a) a first step consisting essentially of heating a composition comprising a metallocene catalyst compound and an activator to a first temperature, ~~wherein the first temperature is in the range of from 60°C to 110°C;~~ and  
 (b) a subsequent step comprising combining said composition of step (a), and a carrier

wherein said metallocene catalyst compound is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrenyl ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrozolyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium ~~and~~ or tin atom or a combination thereof, and wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof, said carrier heated to a temperature consisting essentially of 30-75°C.

11. Cancel

12. Cancel

Application No.: 10/026,171  
 Response dated: May 30, 2006  
 Reply to Office Action of March 9, 2006

13. (Cancelled)
14. (Currently Amended) A method for preparing a supported catalyst composition comprising:
- (a) forming a catalyst system consisting essentially of a metallocene catalyst compound and an activator at a temperature in the range of from 60 °C to 125°C; and
  - (b) subsequently introducing a further component comprising a carrier to a reaction product formed in step (a)

wherein said metallocene catalyst compound is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrene-yl ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrolyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium and or tin atom or a combination thereof, and wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof, said carrier heated to 30-75°C.

15. (Original) The method of claim 14 wherein the supported catalyst composition is dried or substantially dried to a free flowing powder composition.

Application No.: 10/026,171  
 Response dated: May 30, 2006  
 Reply to Office Action of March 9, 2006

16. (Original) The method of claim 15 wherein the free flowing composition is reslurried in a liquid.
17. (Original) The method of claim 16 wherein the liquid is mineral oil.
18. (Previously Presented) The method of claim 14 wherein the metallocene catalyst compound and activator are combined at a temperature of from 60 °C to 110°C.
19. (Previously Presented) The method of claim 14 wherein the metallocene catalyst compound and activator are combined at a temperature of from 60°C to 100°C.
20. (Previously Presented) The method of claim 14 wherein the metallocene catalyst compound and activator are combined at a temperature of from 75°C to 100°C.
21. (Currently Amended) A method for preparing a supported catalyst composition comprising:
  - a) combining a metallocene catalyst compound and an activator at a temperature in the range of from 60°C to 110°C; and
  - b) introducing a carrier to a reaction product formed in step (a)
 wherein said metallocene catalyst compound is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrenyl ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrozoyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation

Application No.: 10/026,171  
Response dated: May 30, 2006  
Reply to Office Action of March 9, 2006

state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium and or tin atom or a combination thereof, and wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof, said carrier heated to 30-75°C.

22. (Previously Presented) The method of claim 21, wherein the metallocene catalyst compound and activator are combined at a temperature of from 75°C to 100°C.
23. Cancel
24. (Previously Presented) The method of claim 21, wherein  $L^A$  and  $L^B$ , are tetrahydroindenyl ligands; A is represented by a member of the group consisting of  $R'_2C$ ,  $R'_2Si$ ,  $R'_2SiR'_2Si$ ,  $R'_2Ge$ , and  $R'_2P$ , where each  $R'$  is independently, a hydride, hydrocarbyl, substituted hydrocarbyl, halocarbyl, substituted halocarbyl, hydrocarbyl-substituted organometalloid, halocarbyl-substituted organometalloid, disubstituted boron, disubstituted pnictogen, substituted chalcogen, or halogen or two or more  $R'$  may be joined to form a ring or ring system, and wherein said Q is selected from the group consisting of hydrocarbyl radicals having from 1 to 20 carbon atoms, and halogens.
25. (Previously Presented) The method of claim 24, wherein said A is  $R'_2Si$ , where  $R'$  is hydrocarbyl; and M is zirconium.
26. (Currently Amended) The method of claim 1, wherein said metallocene catalyst compound consists essentially of is one of dimethylsilyl-bis (tetrahydroindenyl) zirconium dichloride or dimethylsilyl-bis (tetrahydroindenyl) zirconium difluoride.

Application No.: 10/026,171  
Response dated: May 30, 2006  
Reply to Office Action of March 9, 2006

27. (Currently Amended) A method for making a supported catalyst composition comprising:
- a) first forming a reaction product formed from a metallocene catalyst compound and an activator, wherein said metallocene catalyst compound comprises one of dimethylsilyl-bis(tetrahydroindenyl) zirconium dichloride or dimethylsilyl-bis(tetrahydroindenyl) zirconium difluoride;
  - b) second heating the reaction product to a temperature of from 60°C to 125°C;
  - c) then ~~introducing~~ combining a carrier ~~to~~ with said reaction product of steps (a) and (b);
  - d) ~~combining the heated reaction product with the carrier~~  
and wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof, said carrier heated to 30-75°C.
28. (Currently Amended) A method for making a supported catalyst composition comprising:
- a) first forming a reaction product comprising a metallocene catalyst compound and an activator, wherein said metallocene catalyst compound consists essentially of one of dimethylsilyl-bis(tetrahydroindenyl) zirconium dichloride, and dimethylsilyl-bis(tetrahydroindenyl) zirconium difluoride;
  - b) second heating the reaction product to a temperature of from 60°C to 125°C; and
  - c) then introducing a carrier, to said reaction product of steps (a) and (b); and wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof, said carrier heated to 30-75°C.
29. (Currently Amended) A method for making a supported catalyst composition comprising:



Application No.: 10/026,171

Response dated: May 30, 2006

Reply to Office Action of March 9, 2006

- a) first forming a reaction product consisting essentially of methyl alumoxane and one of dimethylsilyl-bis(tetrahydroindenyl) zirconium dichloride or dimethylsilyl-bis(tetrahydroindenyl) zirconium difluoride;
- b) second heating the reaction product, to a temperature consisting essentially of from 60°C to 125°C; and
- c) ~~then introducing~~ combining a carrier ~~to~~ with said reaction product of steps (a) and (b), said carrier heated to 30-75°C;
- d) ~~combining the heated reaction product with the carrier.~~

30. (Currently Amended) A method for making a supported catalyst composition, comprising:

- (a) first heating a composition comprising an activated metallocene catalyst compound to a temperature of from 65°C to 125°C wherein said metallocene catalyst compound is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrenyl ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrozolyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium and/or tin atom or a combination thereof, and further comprising an activator, said activated metallocene catalyst compound

Application No.: 10/026,171  
Response dated: May 30, 2006  
Reply to Office Action of March 9, 2006

further comprising an activator, wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof;

and

- (b) then combining said composition of (a) with a carrier, said carrier being at a temperature of 30- 75°C, to form said supported catalyst composition

31. (Previously Presented) The method of claim 30, wherein said heating of said activated metallocene catalyst compound is from 68-100°C.

32. (Previously Presented) The method of claim 30, wherein said heating of said activated metallocene catalyst compound is from 75-100°C.

~~35~~ 33. (Previously Presented) The method of claim 30 wherein said method further comprises: after a) and b) , (c) then drying said supported catalyst composition at a temperature of from 65°C-75°C.

34. (Previously Presented) A method for making a supported catalyst composition, comprising:

- (a) first forming a reaction product of a metallocene catalyst compound and an activator, wherein said metallocene catalyst compound comprises one of dimethylsilyl-bis(tetrahydroindenyl) zirconium dichloride or dimethylsilyl-bis(tetrahydroindenyl) zirconium difluoride;
- b) second heating the reaction product to a temperature of from 65°C to 75°C;
- (b) then combining said reaction product of (a) and (b) with a carrier, said carrier heated to 65-75°C, to form said supported catalyst composition.

Application No.: 10/026,171  
Response dated: May 30, 2006  
Reply to Office Action of March 9, 2006

35. (Currently Amended) A method for making a supported catalyst composition, comprising:

- (a) first forming a reaction product of an activator and a metallocene catalyst compound, then heating said reaction product to a temperature of from 65°C to 75°C;

wherein said metallocene catalyst compound is described by the formula:



wherein  $L^A$  and  $L^B$  are selected from the group consisting of cyclopentadienyl ligands, cyclopentaphenanthrenyl ligands, indenyl ligands, benzindenyl ligands, fluorenyl ligands, octahydrofluorenyl ligands, cyclooctatetraendiyl ligands, cyclopentacyclododecene ligands, azenyl ligands, azulene ligands, pentalene ligands, phosphoyl ligands, phosphinimine, pyrrolyl ligands, pyrazolyl ligands, carbazolyl ligands, and borabenzene ligands, including hydrogenated versions thereof; independently, each  $L^A$  and  $L^B$  is the same or different; M is selected from the group consisting of zirconium, hafnium and titanium, Q is a monoanionic labile ligand having a sigma-bond to M; depending on the oxidation state of M, the value for n is 0, 1 or 2 such that the catalyst compound comprises a neutral metallocene catalyst compound; A is a bridging group comprising a carbon, oxygen, nitrogen, silicon, aluminum, boron, germanium and or tin atom or a combination thereof, and wherein said activator is an alumoxane; a modified alumoxane; ionizing activators, neutral or ionic; or combinations thereof

- (b) then combining said reaction product of (a) with a carrier, said carrier heated to 30-75°C, to form said supported catalyst composition; and  
(c) then drying said supported catalyst composition at a temperature of from 65°C-75°C.